POPULATION-BASED STUDY ON RISK OF STROKE ASSOCIATED WITH TEMPERATURE CHANGE

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Background and Aims: Most of climate related studies on stroke investigated mortality instead of morbidity. This study used insurance claims data to investigate incidences of stroke associated with the temperature change for population in a subtropical island area, Taiwan.

Methods: We used the sample with claims data of one million insured population obtained from the National Health Insurance program of Taiwan to measure the risk of stroke by temperature variations in 1996-2009. Sex- and age-specific risks were also measured. The meteorological and population data were obtained from the Central Weather Bureau and the Ministry of the Interior, respectively.

Results: With the lowest mean temperature of 16.2 Ž during the 13-year period, the mean monthly incidence rate of stroke was at a peak of 19.7 per 100,000 person-days in January. The mean incidence decreased by month to the 1owest of 17.1 per 100,000 person-days in July, the hottest month, and climbed again in August and the rest of months ranging from 17.8-18.9 per 100,000 person-days. Further analyses showed that the incidence had a strong v-shape association with the minimum daily temperature. The incidence rate decreased from 0.67 per 100,000 person-days at < 10 Ž to 0.56 per 100,000 person-days at 20-24 Ž, then climbed to 0.64 per 100,000 person-days as it was $\geq$ 25 Ž. W e also found the risk of stroke was 2.45-fold greater as the daily temperature range was at 18 Ž than was between 1-3 Ž (1.37 vs 0.56 per 100,000 person-days).

Conclusions: The relative risk of stroke is associated with decreasing and increasing rises starting at the ambient temperature of 20-24 Ž. Severe change in temperature enhances the immediate risk further..

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